

1/30

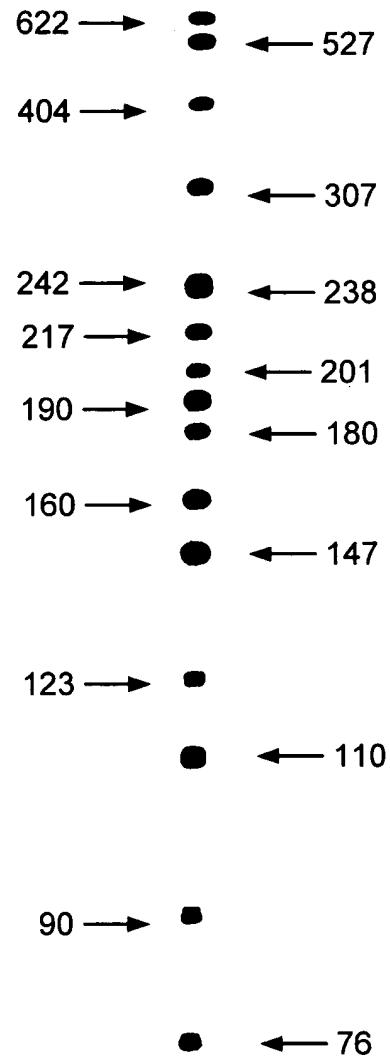


FIG. 1

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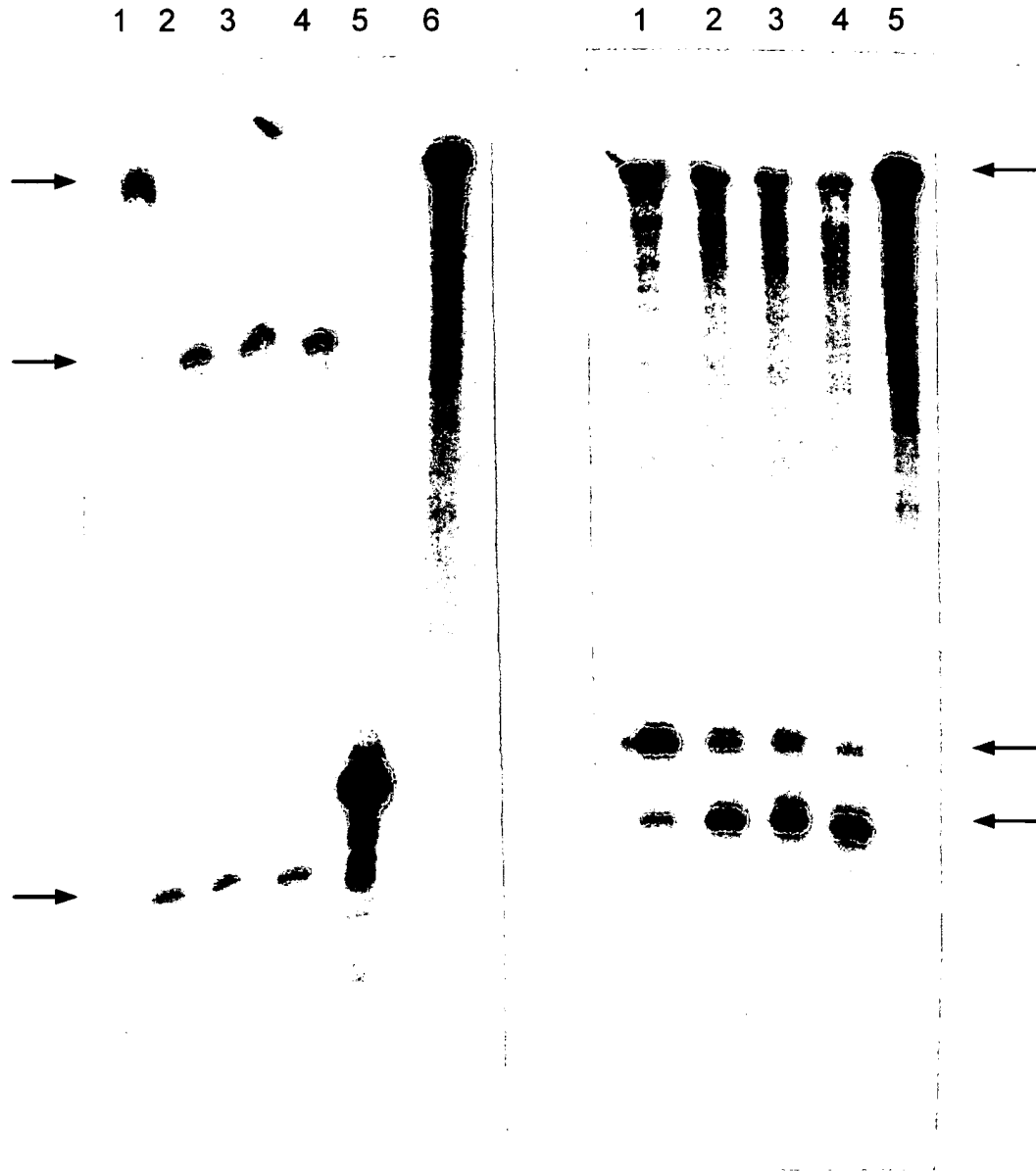
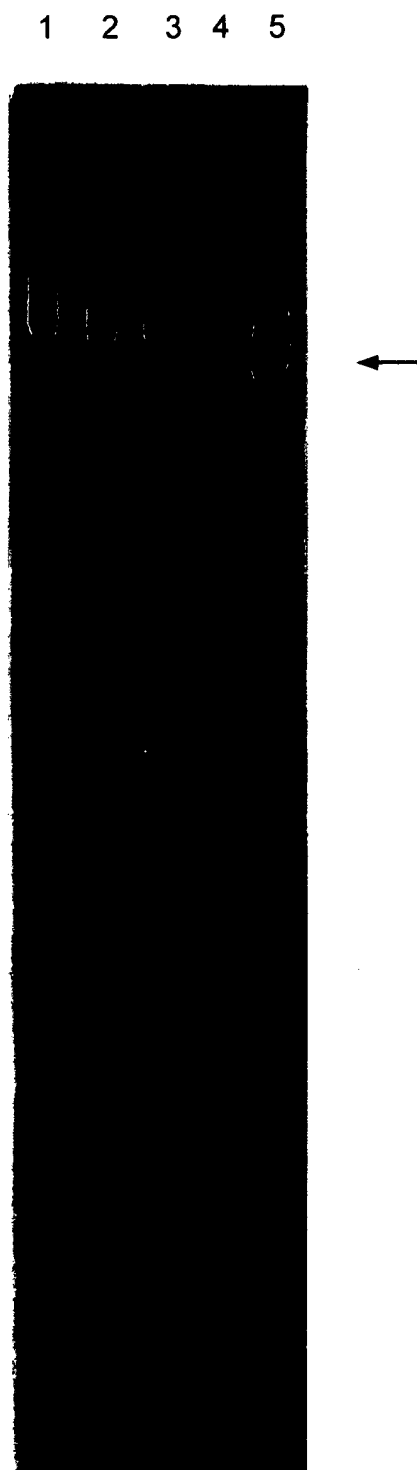
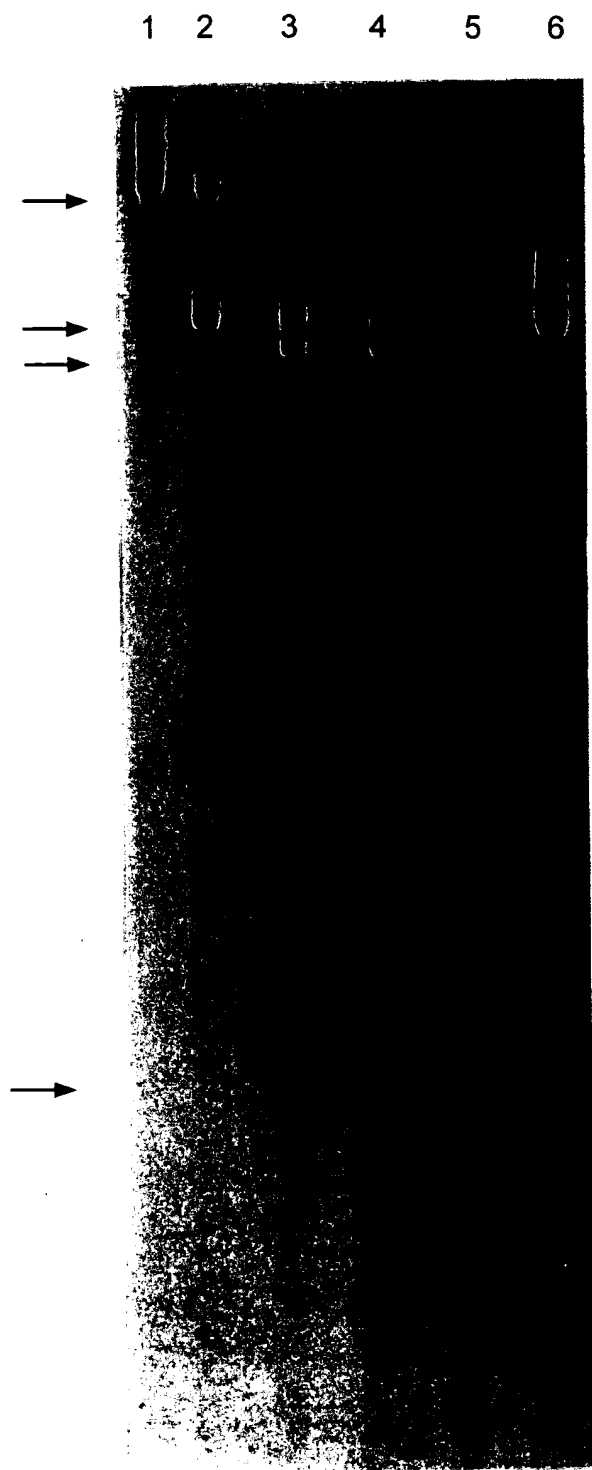


FIG. 2A

FIG. 2B

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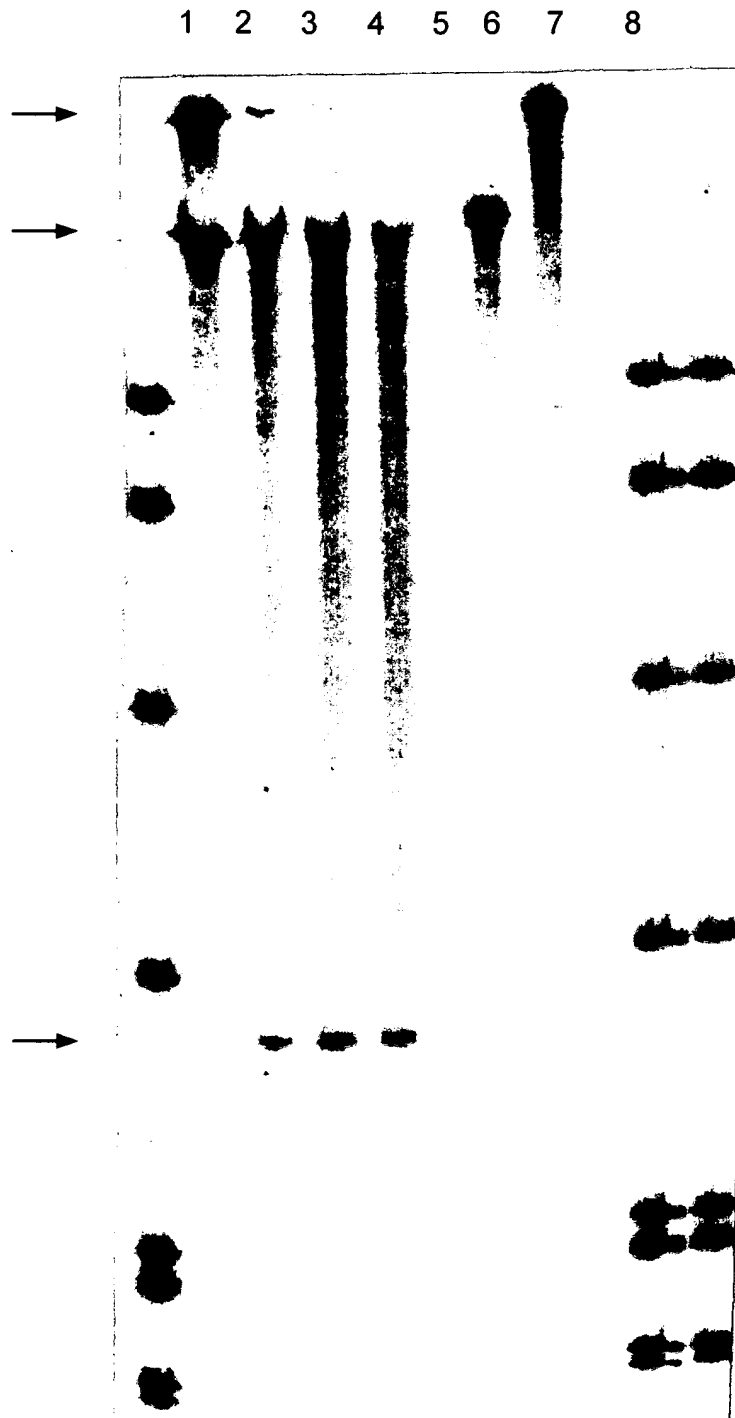


FIG. 3C

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1 2 3 4 5 6 7 8

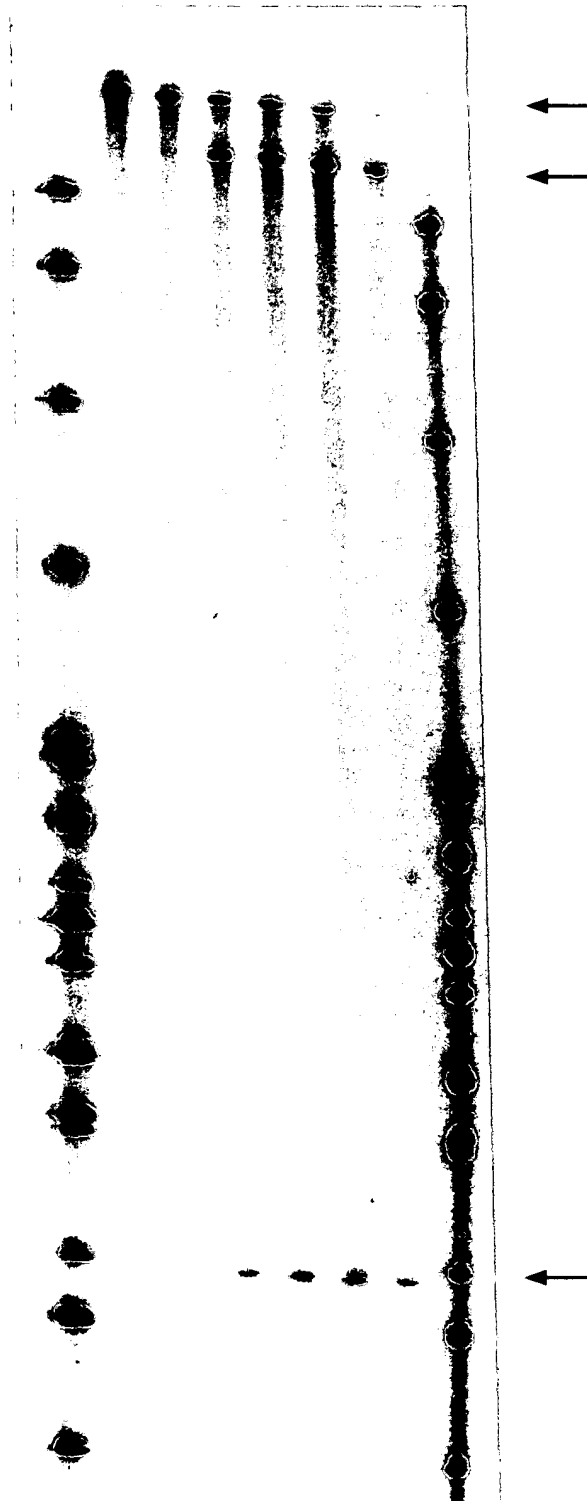


FIG. 4

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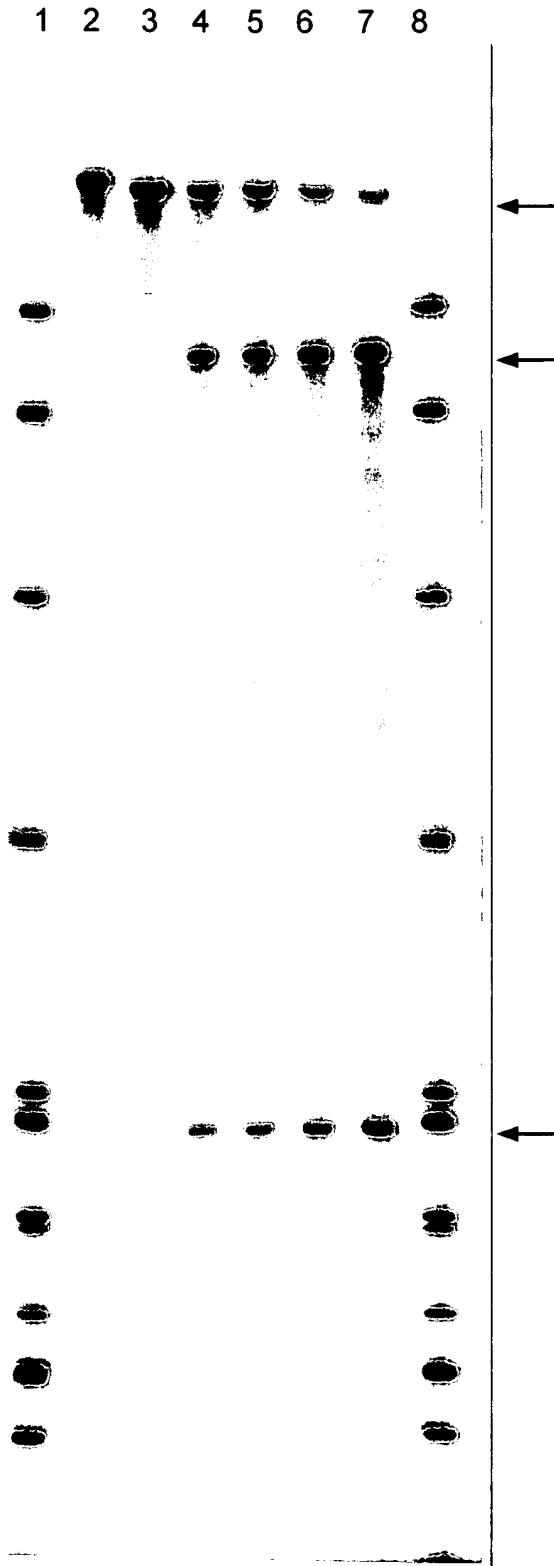


FIG. 5

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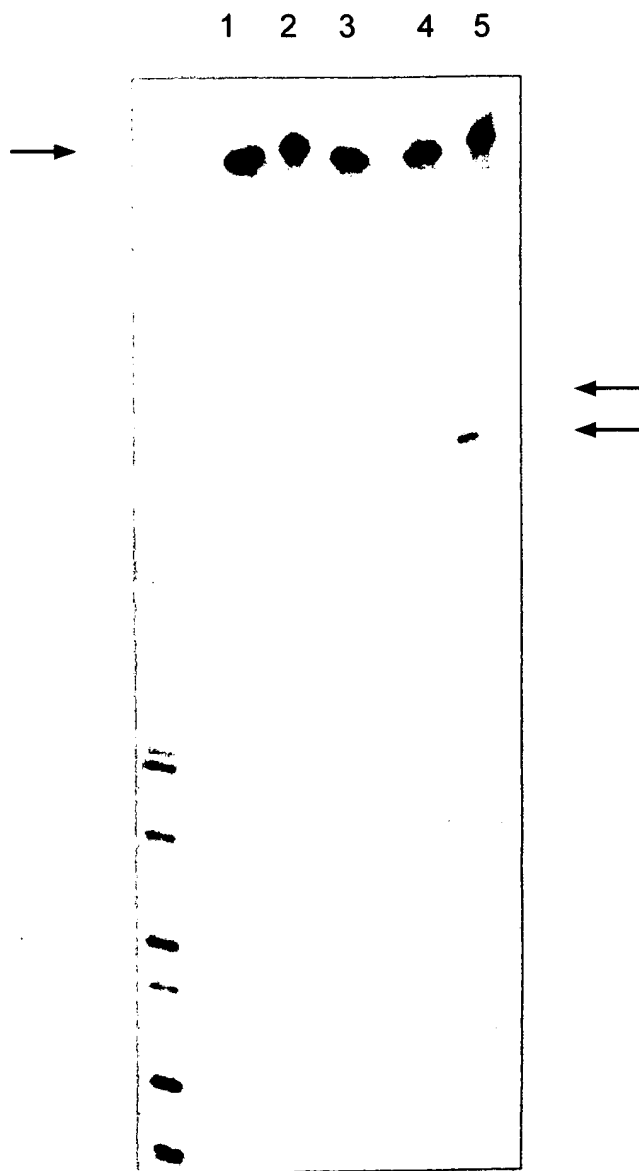


FIG. 6A

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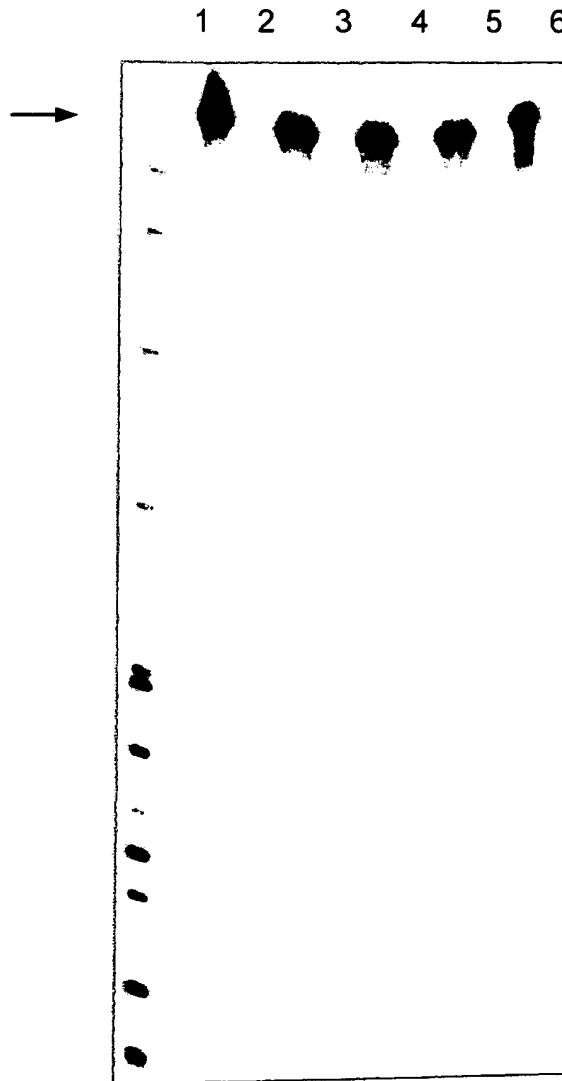


FIG. 6B

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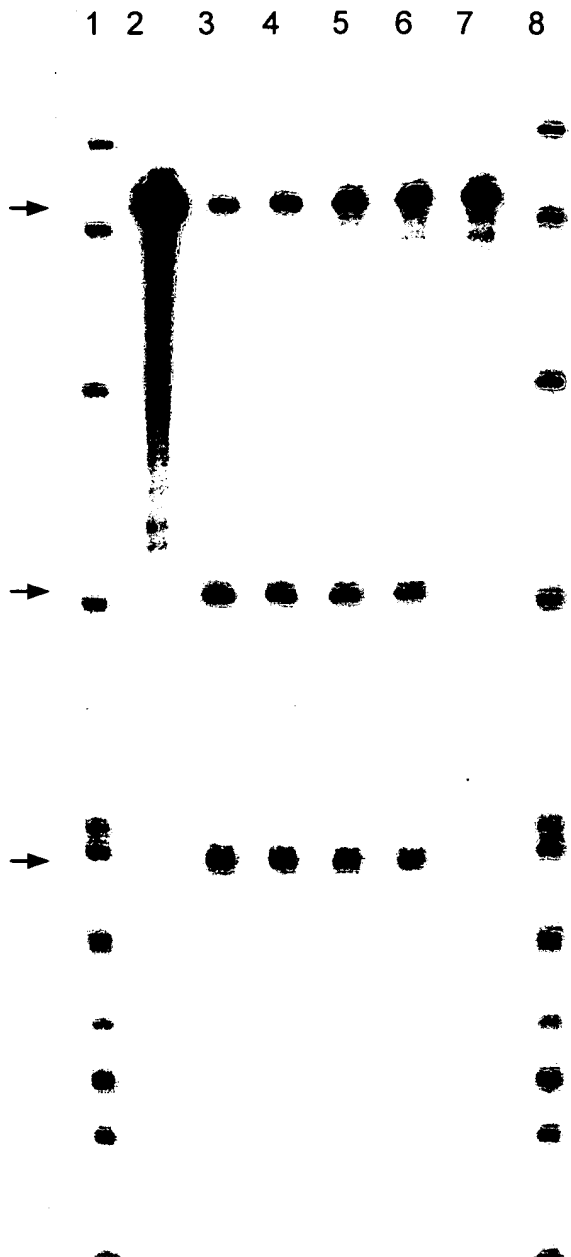


FIG. 7A

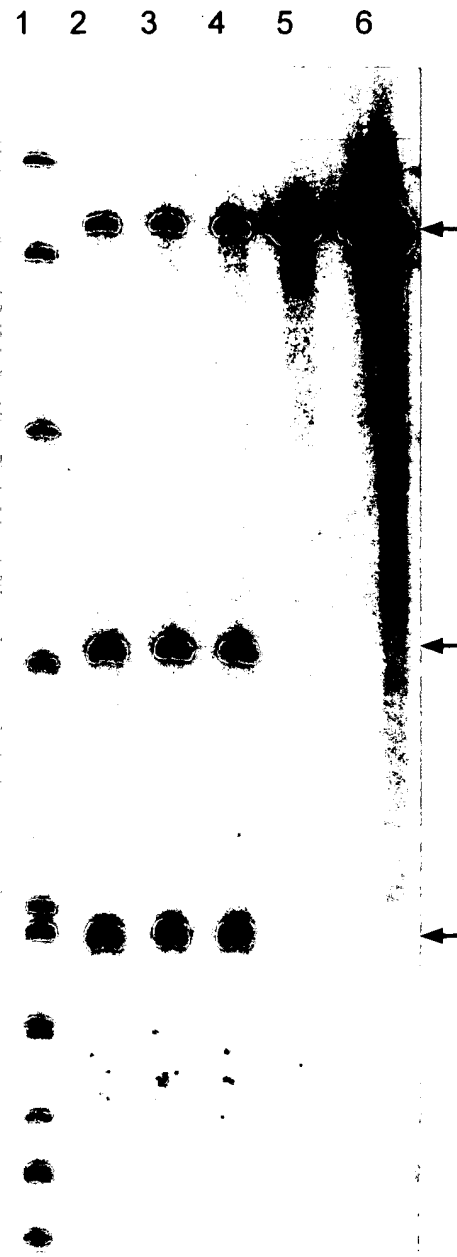


FIG. 7B

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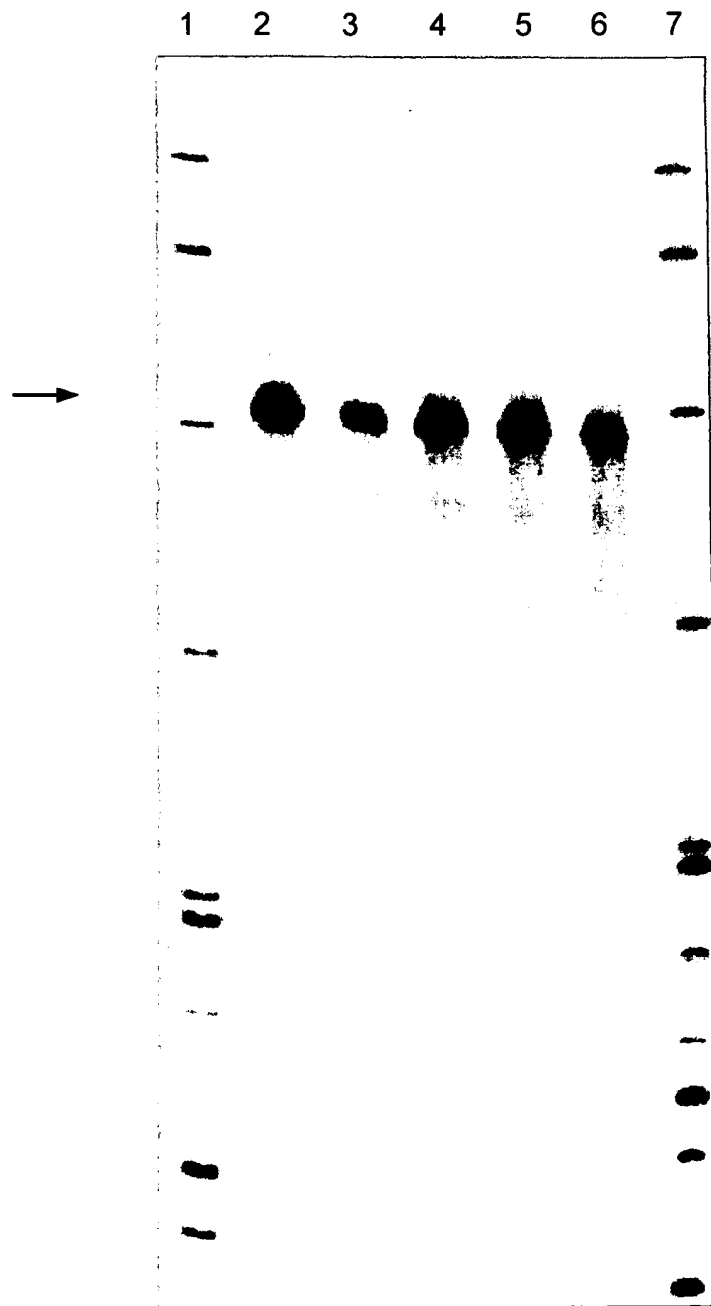


FIG. 7C

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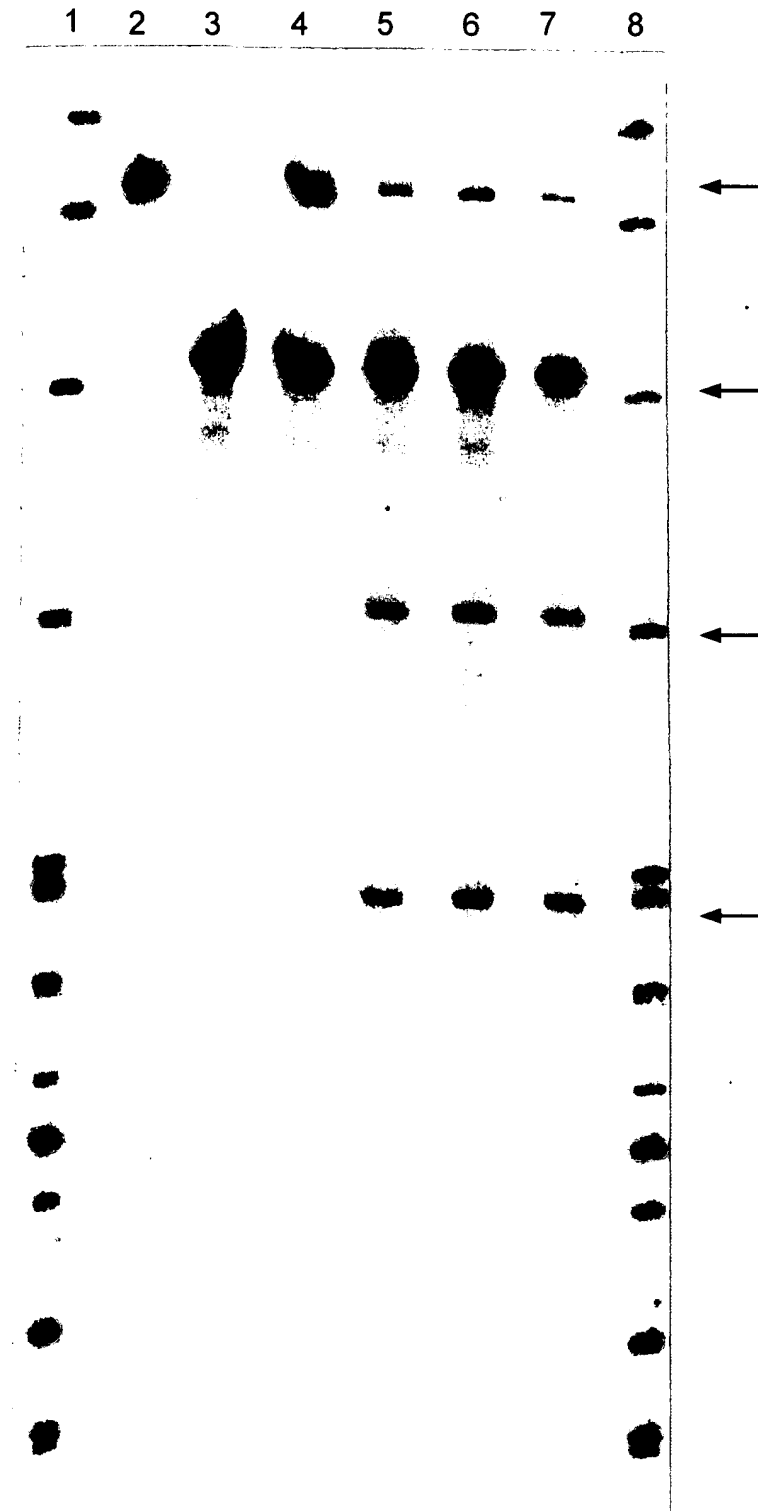


FIG. 7D

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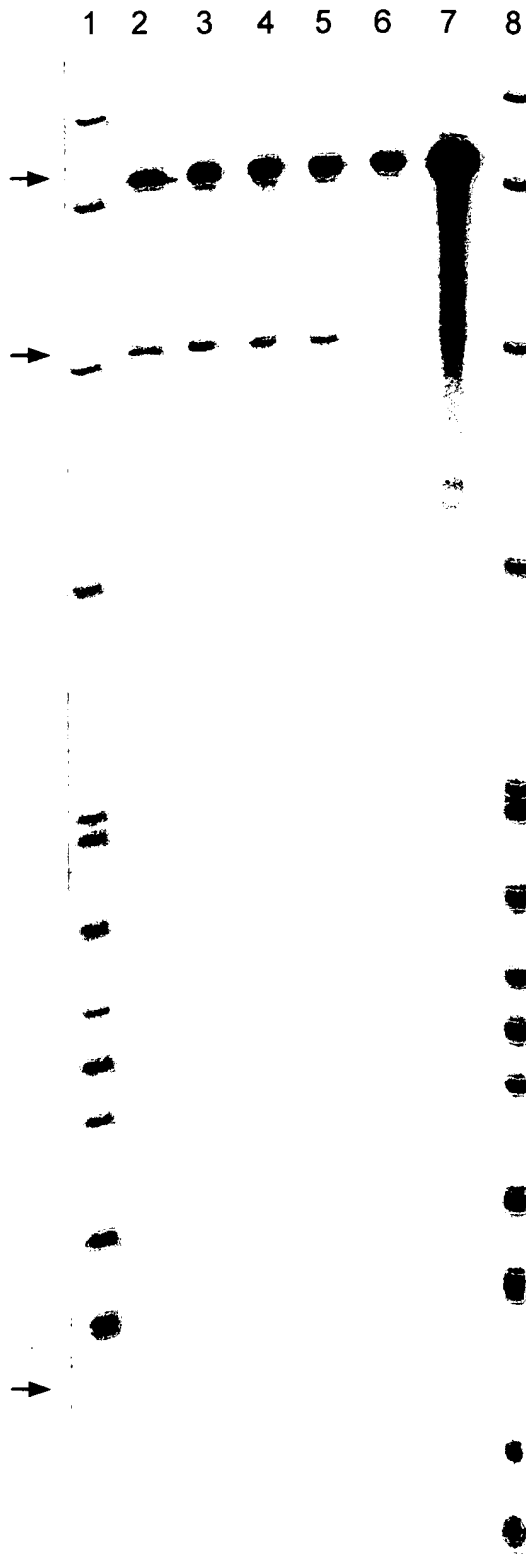


FIG. 8A

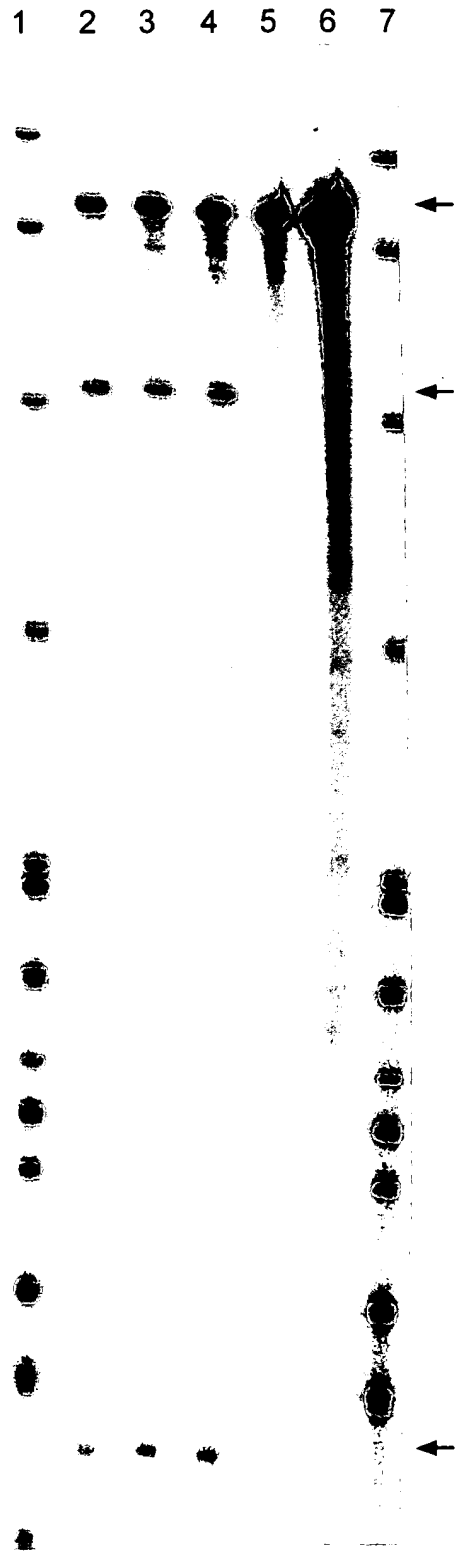


FIG. 8B

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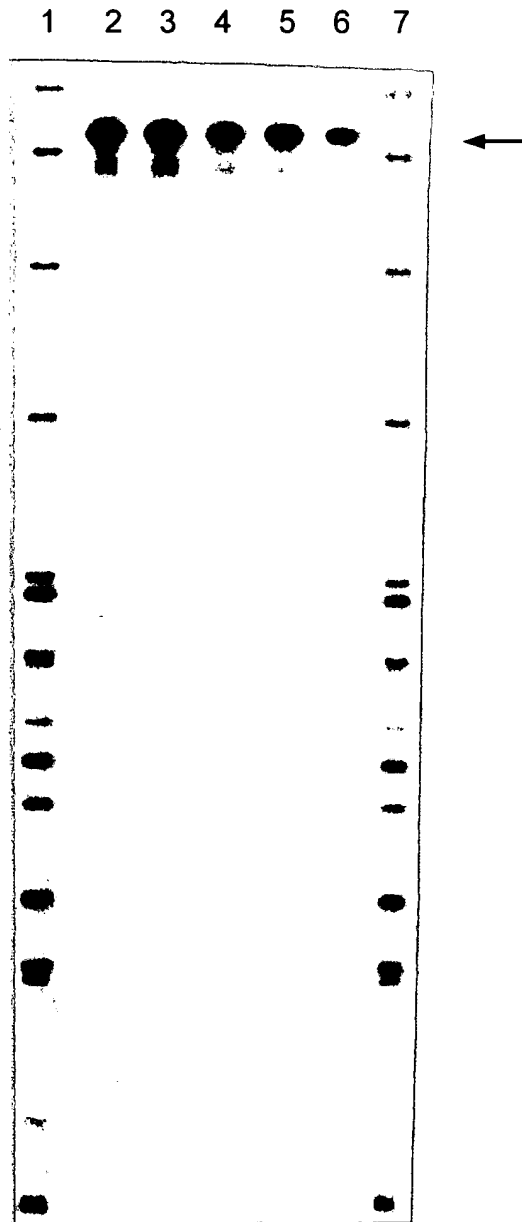


FIG. 8C

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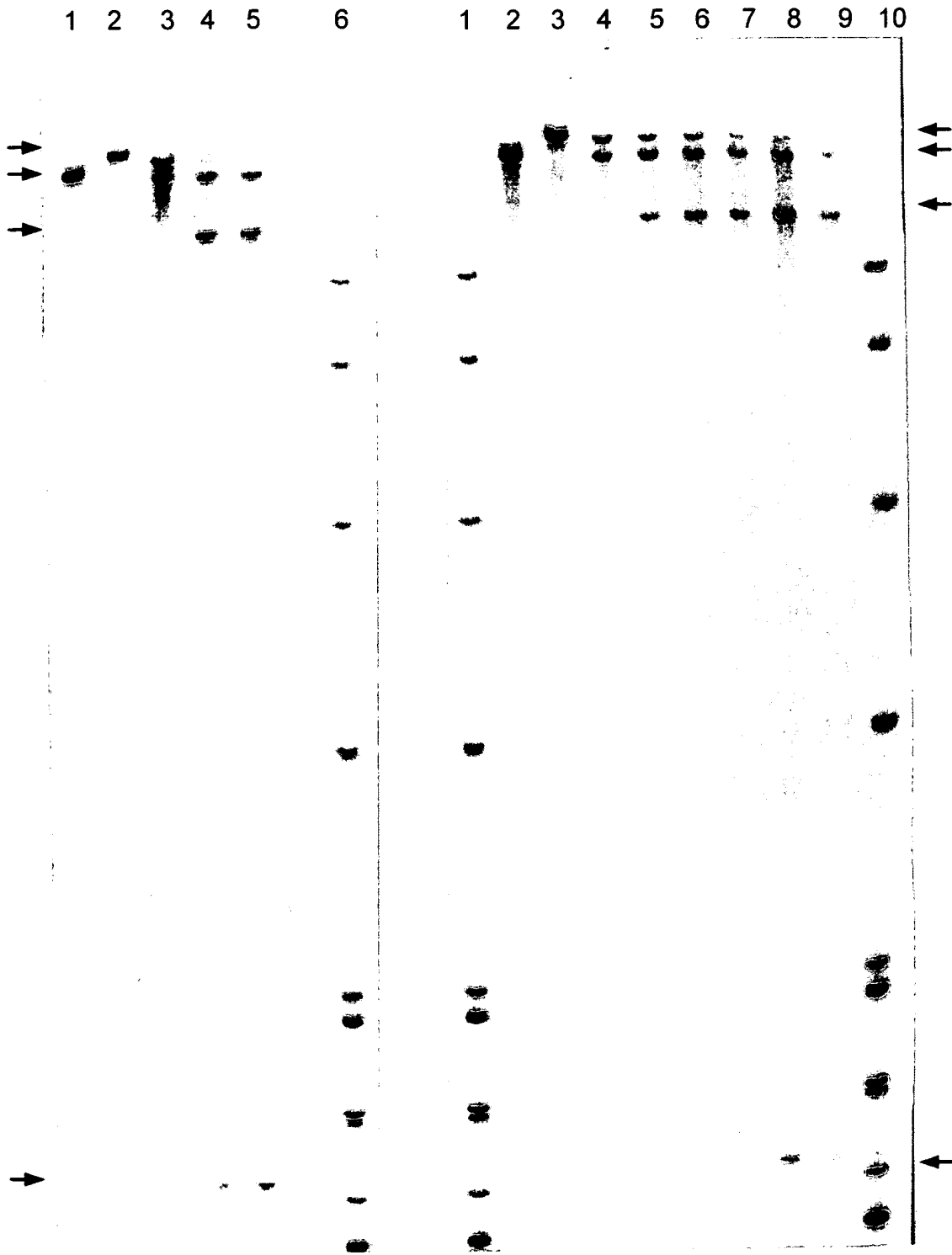


FIG. 9A

FIG. 9B

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SEQ ID NO: 1 Human Rhodospin

TCCCTTNTGNTAGATTGCANNNCCCAATAAANAAGNCCCGCTTAAAGGCTTATCGAAA
TTAATACGACTCACTATANGGAGACCCAAAGCTTAGAGTCATCCAGCTGGAGCCCTGAGTG
GCTGAGCTCAGGCCTTCGCAGCATCTTGGTGGAGCAGCCACGGGTGAGCCACAAGGG
CCACAGCCATGAATGGCACAGAGGCCCTAACTTCTACGTGCCCTTCTCCAATGCGACGG
GTGTGGTACGCAGCCCCCTTCGAGTACCCACAGTACTACCTGGCTGAGCCATGGCAGTTCT
CCATGCTGGCCGCTACATGTTTCTGCTGATCGTGTGGCTTCCCCATCAACTTCCTCA
CGCTCTACGTCAACCGTCCAGCACAGAAGCTGCGCACGCCCTCTCAACTACATCCTGGCTC
AACCTAGCCGTGGCTGAACCTCTTCAATGCTCCTANGTGGCTTACCAAGCACCTCTACANCT
CTCTGCATGGATACTCGTCTTCGGGCCCCACAGGATGCAATTGGANGGCTCTTTGCACCTG
GNGGAAATGCTGTGGTCCCTNGTGGTCNGGNCACCAACGTAAGTGGTNGTGTNTANCCC
AGAACAACTCCGCTCCC

FIG. 10

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SEQ ID NO:2 mut447

GGNNNTTGGGTCGCCGCAATTNAAGAACTCANGGNCCCGCAGCATTTCTTGGGTGGGAGCAGCTACGGGTCAGCCACAAGGG
CCACAGCCATGAATGGCACAGAAANGCCCTAACTTCTACGTGCCCTTCTCCAATGCGACGGGTGTGGTACGCAGCCCCCTTC
GAGTACCCACAGTACTACCTGGCTGAGCCATGGCAGTTCTCCATGCTGCCGCCCTACATGTTTCTGCTGATCGTGTGGG
CTTCCCCATCAACTTCCTCACGCTCTACGTGACCGTCCAGCACAAAGCTGCGCACGCCCTCTCAACTACATCCTGCTCA
ACCTANCCGTGGNTGAACCTTTCATGGTCCTAGTGGCTTCAACANCAACCTCTANACCTCTCTGCATGGANACTTCNTC
TTCCGGCCCCACAGGATGCAATTGTGGAAGGNTTCCTTTAACACCCGGGGGGGAAATTTGCCCTGTGGTCCCTTGGTGGTCCG
GNCANCNAACGGTACTTGTGGTNTTTAANCCATAAAACAATTCCGCTTCGGGAAAAACAATGCCANCNTGGGGTTTCCTTCA
CTNGGTTANGGCGNGGCTGCCCCCACCCCAATCCCNCGTNGTCAANTAATCCCAAGGCNNANTGNCNTTTTAAACAAA

FIG. 11

SEQ ID NO:3 Pro23Leu

NNNTAGGNCGGATGTCNATATAAGCAGANCTCTCTGGGCTAACTAANAAGAACCCCACTGGCTTACTGGCTTATCGAAA
TTAATACGACTCACTATAGGGAGACCCCAAGCTTCCGGAAGCCTGAGCTCAGCCACAAGGCCACAGCCATGAATGGCAC
AGAAAGCCCTAACTTCTACGTGCCCTTCTCCAAATGCCACGGGTGTGGTACGCAGCCTCTTCGAGTACCCACAGTACTACC
TGGCTGAGCCATGGCAGTTCTCCATGCTGGCCGCTACATGTTCTGCTGATCGTGCTGGGCTTCCCCATCAACTTCCTC
ACGCTCTACGTACCGTCCAGCACAAAGAGCTGCGCACGCCCTCTCAACTACATCCTGCTCAACCTANCCGTGGCTGAAC
CTTCATGGTCCTANGTGGCTTCACCCANCAACCCTCTACACCTCTCTGCATGGATACTTCGTCTTCCGGGCCACAGGATGCA
ATTGGAAGGCTTCTTTGCANCCGTGGNCGGGAATGCGCTGTNGTCCTGGTGGTCCCTGGCCATCAACNGTACTTGTGT
NTNTTACCCCATNAACAATTCCGCTCCGGGAAACATGCACATGGGNTTGCCTCACTNGGTCTGGGGCNGGCNCCCCACCC
CACCCCGGTGGTCANTTATCCCANGGCGNAATGCCCTTTNANNA

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FIG. 12

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SEQ ID NO:4 RIB10a

CNGCNCGTTGAAATATAAGCAGACCCCTCTGGNTAACTANAATAACCACTGCTTACTGGCTTATCGAAATTAATACGACTC
ACTATANGGAGACCAAGCTTGGTCGGTCTGATGAGTCCGTGAGGACGAAACGTANANTCTANAGGGCCCTATTCTATAGT
GTCACCTAAATGCTAGANCTCGCTGATCAGCCTCGACTGTCCTTCTAGTTGCCAGCCATCTGTTGTTTCCCCCTCCCCC
GTGCCCTTCCCTTGANCCCTGGAAGGTGCCACTCCCACTGTCCCTTCCCTAATAAAATGAGNAATTCGNTCTCATTTGTCTGAGT
AGTGTCAATCCCAATCTGGGGGTGGGTGGGGCAGNACACNAGGGGAAGATGGGAAACATACAGGCATGCTGGGGANGCCCGT
GGNTCTATGNCTCNGAGGCGGAAAAACACTGGGGNCTAGGGGTACCCCAACCCCTGTACGGCCATAACNCGNGGTTGTG
GTACCCACTAACGTANNNTGCACCCCTACCCGNCCTTCNTTCTCCTCTTNCCTTCCGGTTCCTCACCNAAACGGGCCCTTNG
TCATATCTNGGNCCACCAATANAGTAGTCTTTGCCCCCAAGTCCCTNATGACCTNTAAGACCTTCANNANCCCCCTT
NTTTAAANANCCNNNNNNNNNNCCNGNAAANAAACAACTAATTTTGGGAACCCCCCCCNANAAACCCCTTTCC
NTNTTCCCCCNATTTAATNTTNNNTNCCCCCCCCCCCCNNNTTTTNNCNCNNNNN

FIG. 13

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SEQ ID NO: 5

CNCCCCGCCCNNTTNAANAANCCNAGCCTCTGGCNAACTANANAACCACTGCTTACTGGCTTATCNAAAATTAATACGAC
TCACTATAGGGAGACCCCAAGCTTTACTCGAACTGATGAGTCCGTGAGGACGAAANGCTGCTCTANANGGCCCTATTCTAT
ANTGTCACCTAAATGCTAGAGCTCGCTGATCAGCTCGACTGTGCCCTTCTAATTGCCAGCCATCTGTTGTTGCCCTCC
CCCGTGCCCTTCCTTGACCCCTGGAAGGTGCCACTCCCACTGTCCTTCCCTAATAAAATGAAGATNTTNCATCNCATTGTCT
GAGTAAGTGTCAATCTATTCTGGGGGTGGGTGGGCACGACANCAANGGGAAGATTGGGAAAAAATANCAGGCNTGC
TGGGGATNCCGTGGGCTCTATNGCTTCTGAAGCGGAAAAACAACACTGGGGCTCTANGGGGTATCCCCCCCCCTGTAAAC
NGCATTAACNCGGGGTGTTGTGGTTACCCCAACTTAACGCTANCTGCAACGCCCNAAACGCCCNCCCTTCCCTTTCT
CCCTTCCTTCNCCCCACTTTCGGGGTTCCTCCNTCAACCCNAAATCGGGGCCCCCTTAGGTCCAATTATGCTTCGGCCCCCNCCCN
AAACTAATAGTNGGTTCTTTNGCC

FIG. 14

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SEQ ID NO:6 mouse rhodopsin

TCAGTGCCCTGGAGTTGCCGCTGTGGGAGCCGTCAGTGGCTGAGCTCGCCCAAGCAGCCCTTGGTCTCTGTCTACGAA

FIG. 15

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SEQ ID NO:7 m rho mut 1460

NNNNTCTCCNCTTTCGTTTGTGNANANTCANNAANANAGCGNCCCGGAAGGTGTCAGTGCCTGGAGTTGCGCTGTG
GGACCCGTCANTGGCTGAGCTCGCCAAAGCAGCCTTGGTCTCTGTCTACGAAGAGCCCGTGGGGCAGCCTCGAGAGCCGCA
GCCATGAACGGCACAGAGGGCCCCAATTTCATATGTGCCCTTCTCCAACGTACAGGCCGTGGTGCGGAGCCCCCTTCGANCN
TCCGCAGTACTACCTGGCGGAACCATGGCAGTTCCTCATGTGGCAGCGTACATGTTCCCTGCTCATCGTGGGCTTCC
CCATCAACTTCCTCACGCTCTACGTACCGTACAGCACAAAGCTGCGCACACCCCCCTCAACTACATCCTGGCTCAACT
TGGGCCGNTGGGNTTGGAACCTCCTTCCCATTTGGGTCNTTCCCGGAANGGANTNCACCAACCCCTCTAACACATCAA
CTCCCATGGGCTACTTCGTTCTTTTGGGCCCCNCAGGCTGTTAATCTCGAAGGGCTTCTTTGCCACACCTTGGAAGTGAA
ATCNCCCTGTGGTTCCCTGGTGGTCNTGGCCCATTAACGCTACTTGTGGTCTCTGCAACCCCAATAACAATTTC

FIG. 16

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SEQ ID NO:8 RIB33

TCCCCNNNTTTGTAGCNCTGCCAANAAGGCCAGCTCACAGGANAANTANANAACCCACTGCTTACTGGCTTANC
NAAATTAATACGACTCACTATAGGGAGACCCCAAGCTTGGACATCTGATGAGTCCGTGAGGACGAAAAAATTGGTCTACA
GGCCCTATTCTATAATGTCACCTAAATGCTANAGCTCGCTGATCATCCTCNACTGTGCCCTTCTACTTGCCAGCCNCTCTN
TTGTTGCCCCCTCCCCCGTGCCCTTCCCTGACCCCTGGAAGGTGCCACTCCCACTGTCCTTCCCTAATAAAATGAGGAAAT
GCATCGCAATTGCTGAGTAAGTGTCAATTCTTGGGGGTGGGTGGGCAGGACNCAAGGGGAAGATTGGGAAAT
ACAATANCCAAGGANCNCTCCCCNCGGTAATTGCGGATTNGGCTCTNTCGCTTCCCTAAGGCNGAAANAACAACCTNNG
GCGCTNCGGGTTTCCCCCNCCNCCCTNTTAGCNGCGCATTANTCGCCGCGGTGTTGTTGTTACTCCCCACCTNAACG
CTACANTTGCCAGCGCCTAACGCCCCCCTTNCNTTCTTCCCCCTCCTTCTCNCACTTCCCCGGCTTCCCCCNCCANCC
NAAATCNGG

FIG. 17

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SEQ ID NO:9 HUM RDS

NNTTGTGTCAGTNGGATGCTATATAAGCAGAGNCTCTGGCTAACTAGNAGAACCCACTGCTTACTGGCTTATCGAA
ATTAATACGACTCACTATAGGGAGACCCAAAGCTTGGTACCGAGCTCNGATCCACTAGTAACGGCCGCCAGTGTGCTGGAA
TTCCTCAGCGCCACGACCACTGACTATCCCCTGCTCAAGCTGTGATTCGAGACCCCTGCCACCACTACTGCATTCAAG
GGGATCCCAAGCTAATGGGACTCGACATGGGTGCCCCACGGCANCTCCCTACANCTTGGCCANCTNCACTTTTCCCC
AAAGNCCTAAATCTCCGCCCTCTCGGCTCNTTAANGTTNGGGTGGGGANCTGTGCTGTGGGAAACAACCCAGAAANACT
TGGGCAGCATGGNGCTACTGAAAGTNCATTTTGAACAGAAACGCTCCANTTTGGCCCCAAGNNCNGNTCCCTAAANT
GGTCTCCNTNTTTGGTNGNNTCCNCNCTTTCCNCCCTNGGAATGTTCCTGAAAAATTNAACNCCAAAAAGAACAAATTG
AAAAATANTTCTNAAAAACCCCTTTTGTNNCCCCCCCCCNAAAAAGGGAAGGGNNGNCCCTTTTNTTCCCCCCCCGGG
GGGAAAAATTTNNNNAANCCCCCCCCCCTTTTNA

FIG. 18

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SEQ ID NO:10 h per mut 257

TTATACNACACTATANGGAGACCAAGCTTGGTACCGAGCTCGGATCCACTAGTAACGGCCGCCAGTGTGCTGGAATTC
TTCANCGCCAGGACCAAGACTATCCCCCTGCTCAAGCTGTGATCCGAGACCCCTGCCACCACTACTGCATTACGGGGG
ATCCAGGCTAGTGGGACNCGACATGGGTATCCCCAGGGCAGCTCCCTACAGCTTGGGCCATCTGCACCTTTTCCCAAGG
CCCTAAGTCTCCGCCTCTGGGCTCGTTAANGTNTGGGTGGGAGCTGTGCTGTGGGAAACAACCCGGACTACACTTGGCA
AGCATGGCGCTGCTGAAAGTCAAGTTTGAACAGAAAAAANGGTCAAGTTGGCCCAAGGGCTCTGGCTCAGGAAACTGG
GTTNCCCNCCNNGTTTNGGTTTGGNTGCATCANCTNCCAAAAANNNNNNNNNNNNNNNNNNNNNNNNNNNNNNNNN
NN
NN
NN

FIG. 19

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SEQ ID NO:13 h per mut (359)

TTTTTNTGGNTNTCNAATTAAACGACTCACTATAGGGAGACCCAAAGCTTGGTACCGAGCTCGGATCCACTAGTAACGGC
CGCCAGTGTGCTGGAATTCTTCANCGCCAGGACCAAGACTATCCCTGCTCAAGCTGTGATTCGAGACCCCTGCCACC
ACTACTGCATTACCGGGGATCCCAGGCTAGTGGGACTCGACATGGGTAGCCCCAGGCGAGCTCCCTACAGCTTGGGCCCA
TCTGCACTTTTCCCAAGGCCCTAAGTCTCCGCCCTCTGGGCTCGTTAAGGTTTGGGTGGGAGCTGTGTGGGAAGCAA
CCCGGACTACACTTGGCAAGCATGGCGCTACTGAAAGTCAAGTTTGACCCAGAAAANCGGGTCAAGTTGGGCCCAAGGGC
TCTGGGCTCNATGNAACCTNGGTTTCCCCCCCCCTNTTTGGGCTGGGCATCATCATCTTCAGCCTGGGANTGTTCTG
AANATTGAACCTCCCAAAGAGANCGATGTGATGAATAAATTCTGAAANCCATTTTGTGCCCCACTCATTTGANAAGGANGGG
TGNATCCTGTTTCTTCACTCCCTGNTGGAAAATGCTACAANCCCTGAACC

FIG. 20

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SEQ ID NO:14 rib30

CNTTGGTGGTNCGTGTCGGNTGCTATATAAGCAGAGCTCTCTGGCTAACTAGAAAGAACCCACTGCTTACTGGCTTATCGA
AATTAAACGACTCACTATAGGAGACCCAAAGCTTACTTTCAGCTGATGAGTCCGTGANGACGAAAGCGCCATCTAGAG
GGCCCTATTCTATAGTGCACCTAAATGCTAGAGCTCGCTGATCAGCCCTCGACTGTGCCCTTCTAGTTGCCAGCCATCTGT
TGTTGCCCCCTCCCCGTGCCCTTCCCTTGACCCCTGGAAGGTGCCACTCCCACTGTCCCTTCCCTAATAAATGATGAAATTG
CATCGCATTGCTGAGTAGGTGTCAATTCTATTCTGGGGGTGGGTGGGCANGACANCAAGGGGGAAGATTGGGAAAAACA
ATNCCCGCCTGCTGGGGATGCGGTGGGCTCTATGGCTTCTGAGGCGAAANAACNNCTGGGGTCTNNGGGGTTCNNCCCC
CCTGTNNCGCCTTNANNCGGGGTGTGTGNTCCCCCCTTANCNNTTNNNNNNCCNNCCCCNNCNCNNTT
NNTCCNNNNNTNCNCNNNTTNNNNNGNNTCCNNNNNNNTNNNNNGGGGCNCNNNGTCCNNTNNNNCCNCCCCNNNNNC
NNCNCNNNNNTNTGNGGCCCNCCNNCNCNNNNNCNCN

FIG. 21

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SEQ ID NO:15rib31

NNTTNTCCTACGNCCGTTTAAANANAACAGACCCTCTGGANAATTANATNNCCACTGCTTACTGGCTTATCGAAATC
AATACGACTCACTATANGGAGACCCCAAGCTTACAGTCCCTGATGAGTCCGTGAGGACGAAAGGCTGAATCTANAGGGCCC
TATTCATAGTGTCACCTAAATGCTAGAGCTCGCTGATCAGCCCTCGACTGTCCTTCTAATTGCCAGCCATCTGTTGTTT
GCCCCCCCCGTCCTTGACCCCTGGAAGGTGCCACTCCCACTGTCTCTNTCCCTAATAAATGATGANNTTGCATCG
CATGTCTGAGTAAGTGTCANTCTATTCTGGGGGTGGGTGGGCGANGACANCAAGGGGAAGATTGGGAAAAACATTN
CACGCATGCCGGGATGCGGTGGGCTCTNTTNGCNTCNGAAGCNGAAAAACNACTGGGGCCCTANGGTTNNCCNN
TCCCCCNTGTAAACNGNCCTTNAACNCGGGGTGTTGTGGTTNNCCNANCTTANCNCTNAACTTCCNNCCCCNNCCCCCNC
TCTTCCCTTTTCCCTCCATCTCCNCNTTTNCCCGNTCTCCCTTNCACTNAAATGGGGCCCCCTACNGGNCNTNTNTCT
CTTNNNNCCNCCNANANATATNCTNGTNTNNTTCNCCTCTCGGGCCCT

FIG. 22

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SEQ ID NO:16 PCR3 polcolla2

NTCNCGNCATTTAANCAGGCCAGGNC TACCGC NNGGTCCANGTAGGCCGGGAGCCCCAGCAACGCCGGGAAGGCCAGCAG
CACCTTGGCACCAAGTAAAGCCGTTTGCTCCAGGATTACCANAGAGTCCAACGGGGCCGGAGAGGCCTGGAANACCACTT
CACACGGGGAACCGCGGTTCCAGTAGGACCAAGCTTACCAACAGCTCCAATTCAACCTTGGGGCCAGGGCACCTGG
GAAGCCTGGANGGCCAGCAGACCAATGGGACCAAGCAGGACCAACCTTCCATCACTGCTTTNGCNCAGCTGGGC
AAGGGCACAACACTTCTCTCACANGAACCCACGGCTCCTGTTTNACTGAATTCATTTACAGGGCACAGTTCACCTT
CACACAAGAACACCGNTGTCCCTTCATCATCAGACATGTTTCCCTAATGCTTGAGCAGANTCAGATTCAGGAAACACACAC
CTTTGTCCACATCTCTNCACAGTCTCGGTTTCAGGTACACTCCCACCTGCAGAGGCACTGACCAACCTGAGACATTGACA
TTNCAGNCCACAGTCTGAAC TGAGCGGGCACGCCATGGC NAGTCATACCTGTCA GNATCATCTCTCTTANCATTC CCAA
NGGCAGAA TGAAAGCTGACTCCCCAATGTCTTATTTTAANNANGGTTTNA AANNNNNNNNNNNNNNNNNNNNNC
CCCCCCCCCTTNGGGTTTATTATCTATNCNCCCNCTNGGATATCTTTNCCCCCTTNC CCCCCTNAAANTTTTNTTTT
TNNNN

FIG. 23

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SEQ ID NO:17 tot polcolla2

CCCTTTAAACANGGCCAGGAATACCGCGGGGTCCAGGGAGGCCGGACCCCANCAACGCCGGGAANGCCAGCAGCACC
CTTGGCACCAAGTAAANGCCGTTTGCTCCAGGATTACCAAGGAGGTCCAACGGGGCCGGAGANGCCTGGAAGACCACTTCACC
ACGGGAACGCGGACCAAGCANGACCAAGCGTTACCAACAGCTCCAATTTCACCCCTTGGGCCAGGGCACCTGGGAAGC
CTGGANGGCCAGCAGACCAATGGGANCAAGCAGGACCAAGGACCACTTCATCNCCTGCCNCTGGCACCAAGCTGGGCAA
GGCACAAACACTTCTCTCTCACNAAGAACCACGGNTCCGTGTTAACTGAATTCCATTTCACAGGGCACAGTTCACCTTC
ANACAGAACACGGGTGTCCCTTCATCATCAAAACATNTTCCCTATNCCTTGAGCAGAAATCAGATTGAGGAACACACACTTG
TCACATCTCCTCACAGTCTCGGTTTCAGGTAACACTCNCACCTGCAGAGGCACTGACNAANCTCAGANATTTANATTCCN
CTCCNCAAGTTGAAGTTAGCGGGCCCTNNCATTTGGNTTGTCTTAACCTNNGGGGTTTNNCTNNNNNNNNNTTT
NACNANTCCCAANGGGGANAANAGNTGACTCCTATGTCTTNTNTNAAAAGGTTTTTNAAAAATTAACCCCCCCCCCTN
TTGGGTATTATTATTTTTTNNCCCCCTTTTNGGAANCNTNNCCCCNTTTTCCCCNNNAAANTTTTTNTTTTTTT

FIG. 24

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SEQ ID NO:18 RIB908

NCTTTCNNTCTNATNCATANAAGCAGGCCCTCTNNAAAACTANANTTCCACTGCTTACTGGCTTATCGAAANCAATAC
GACTCACTATAGGGAGACCCAGCTTCGGCGGCTGATGAGTCCGTGAGGACGAAACCAGCATCTAGAGGGCCCTATTCTTA
TAGTGTCACCTAAATGCTAGAGCTCGCTGATCAGCCTCGACTGTCCTTCTAGTTGCCAGCCATCTGTGTTGCCCCCTC
CCCCGTGCCCTTCCCTTGACCCCTGGAGGTGCCACTCCCACTGTCCTTTCCTAATAAATGANGAAATTGCATCGCATTTGTC
TGAGTANGTGTCAATTCTATTCTGGGGGTGGGTGGGCANGACANCAAGGGGAAAGATTGGGAANACAATAACAGGCAT
GCTGGGGATGCGGTGGCTCTATGGCTTCTGAGCGGAAAGAACCAACTGGGCTCTANGGGTATCCCCACNCCCCTGT
TACCGGCGCATTAANCGCGGGGTGTTGTGGTTACCCNCAACTTAACGCTACACTTGCCACGCCCTAACGCCCTCCTTTC
GCTTCTTCCCTTCTCCCACTTCCCCGNTTTCCTTCAACTCTAATCGGGCNCCTTAGGTCCAATTAATCTTACGGN
CNCACCCAAACTNATAGTAAGTCCTTNTGGCCCCCCCCAAAAGGTTCCCCCTAAATG

FIG. 25